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CALL FOR PAPERS FOR SPECIAL ISSUE

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THEME: "INTEGRATIVE OMICS IN UNDERSTANDING PEOPLE, HEALTH AND DISEASE"

International collaborative initiatives like Human Genome Project, Human Genome Diversity project, HapMap project etc., helped in understanding human genome, and its diversity in World populations. These genomic explorations were expected to revolutionize the domain of health and disease, specifically in terms of diagnosis, prognosis, and treatment. Though now these targets appear farfetched, the genome diversity and genome association studies, indeed, stimulated a drift from hypothesis driven to technology driven research. The result of these studies reinforced the notion that genes behave differently in different environments (phenotypic plasticity), implying differential association of genes with diseases and treatment responses in different populations and environments. This so-called environmental diversity may manifest at different levels like biological, physical and cultural; hence to understand health and diseases, a holistic or anthropological approach seems an imperative necessity.

Series of large scale genome-wide association studies [GWAS] with respect to wide variety of human traits and diseases has exploded hundreds of genetic variants associated with human height, adiposity, skin color, anthropometry, clinical parameters like glucose, lipids, etc. These GWASs has developed analytical methods to assess millions of genetic variants together using complex statistical models in order to get reliable and robust genetics associations. A boom in the field of metabolomics, which is a system-wide understanding of metabolites present in all types of human cells and fluids in different time points has given a big push in the field of 'Phenomics'. Technological advancements in reliable characterization and quantitative measurement of small metabolites are supporting the epidemiologists in conducting phenomic research in large cohorts. In last decade there is a continuous decline in the cost of high-throughput sequencing and other *omic* technologies has motivated researchers across the

biological disciplines to undertake large scale multi-omic projects.

Today, a health condition (be it a disease or response to drugs) is increasingly being understood as an outcome of complex gene-environment interaction rather than a phenotype stemming from underlying genotypes. This newer understanding has brought Lamarckism to the forefront in the form of epigenetics, which otherwise entails inheritance of acquired traits due to changes around DNA molecules. Thus, understanding the causes for disease burden and coming up with universal national policies becomes a challenge, specifically in ultra-diverse developing countries like India, where enormous diversity is reflected in various aspects of social organization like tribe, caste, religion, languages, geography etc. Moreover, India, due to its traditionalist mindset leading to strict mating (marriages) rules, harbors thousands of Mendelian populations with unique gene pools. This further complicates the understanding of gene-environment interaction in health and disease, as the study model has to accommodate not only the differential distribution of diseases and their risk factors in various population groups as well as huge genome diversity. Therefore, anthropologists, who understand evolution in terms of bio-social aspect, face a major challenge in comprehending the growing burden of diseases due to huge variations in genomic and environmental patterns. Biological anthropologists are supporting multi-omics studies among healthy individuals to understand natural variation in the phenotypes that may improve understanding of the genetic and non-genetic components of multi-omics biomarkers. Nowadays, clinical geneticists are prioritizing diseases where multi-omics technologies could have significant impact especially in defining the intermediate or endo-phenotypes of disease.

The present call for papers invites researchers across India and abroad to submit their manuscripts focusing on genome diversity, genetic epidemiology, epigenetic studies, metabolomic studies with respect to health and disease.

Prof. M.P. Sachdeva,
Prof. K.N. Saraswathy,
Dr. Vipin Gupta